

REMARKS

Claims 2 and 3 are canceled without prejudice to reentry and their subject matter is incorporated into independent claims 1 and 24. Claims 21-23 are also canceled without prejudice to reentry.

In response to the outstanding Office Action:

(1-3) Claims 21-23 were rejected under 35 U.S.C. §102(b) over Cuchiaro et al. (US 6,225,656). Claims 21 to 23 are canceled. Accordingly, this rejection is moot.

(4) Claims 1-5 and 24 were rejected under 35 U.S.C. §103(a) over Cuchiaro in view of Furumura et al. (US 5,506,443). This rejection is respectfully traversed.

As exemplified in Fig. 1L, independent claims 1 and 24 recite

*a first capacitor protection insulating film [14 (14a+14b); col. 8, line 1]
covering the dielectric film and the upper electrode;*

*a second capacitor protection insulating film [16; col. 8, line 37] formed
on the first capacitor protection insulating film; and*

*a second insulating film formed [17; col. 10, line 14] on the second
capacitor protection insulating film ...*

The claims recite (1) that both the second capacitor protection insulating film 16 and the second insulating film 17 are of silicon oxide, and (2) that an amount of carbon contained in the second capacitor protection insulating film 16, which is closer to the capacitor, is larger than the amount of carbon contained in the second insulating film 17.

The large amount of carbon means that the second capacitor protection insulating film 16, which is closer to the capacitor, hardly contains any hydrogen.

Cuchiaro. Cuchiaro discloses (Fig.3, lower to upper): an SiN film 135 of three layers (bottom region 137, center region 138, and top region 139); and an NSG film 136. Cuchiaro is, however, silent about the amount of carbon in the silicon oxide films covering the capacitor—the word “carbon” does not occur in this reference.

Furumura. On the other hand, as shown in Fig. 1, Furumura discloses an SiO₂ film 2 and a PSG film 3 which contain carbon. Although an SiN film or the like may be used in place of the SiO₂ film 2 and PSG film 3 (e.g., Furumura’s claims 3 and 4), interstitial carbon is used to obtain a large adhesive strength between insulating films made of different materials (column 4, line 57). All of Furumura’s examples show different materials.

(The Examiner is referred to Fig. 2, for example, showing “peeling,” due to lack of adhesion, as a function of carbon concentration at the interface of PSG and SiO₂; col. 1, lines 21-27, listing junctures of different materials; col. 1, lines 51-54 expressing the object of “large adhesive strength;” and col. 1, lines 55-64, emphasizing “a peak of carbon ... at the interface.”)

The Applicant’s Claims Cannot Be Reached. If, for argument’s sake, the disclosure of Furumura were applied to Cuchiaro, in order to improve the adhesive strength, according to the teaching of Furumura, then the Applicant’s claims would still not be reached.

The carbon contents in the SiO₂ film 2 and PSG film 3 of Furumura are the same, as shown in Fig. 2 of Furumura. The reference teaches a peak of carbon at the interface between the SiO₂ film 2 and PSG film 3, but *not* a difference in carbon content between the layers—which is what the Applicant claims. The other reference, Cuchiaro does not even mention carbon. Therefore, even if the references were combined, the claims would not be reached.

Combination. The disclosure of Furumura might be applied to the SiN film 135 and the NSG film 136 of Cuchiaro, but it would not be applied to any two regions among the bottom region 137, center region 138, and top region 139 of the SiN film 135, because these are of the same material and Furumura teaches different materials. Therefore, the references would not have been combined in the first place.

The Examiner is invited to consider that the material of the Applicant's carbon-containing insulating film, namely silicon oxide, is different from the SiN (silicon nitride) film 135 of Cuchiaro. The SiN film 135 is a necessary structural element acting as a hydrogen barrier in Cuchiaro.

In view of the aforementioned amendments and accompanying remarks, the application is submitted to be in condition for allowance, which action, at an early date, is requested.

Respectfully submitted,

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